Site Name: Sunshine Laundry, Fort Dodge

Extended Site Screening (ESS)

CON 12-15
Doc # 27272

Project Manager: Hylton Jackson

Date: July 16, 2012

Summarize the site history (past usages, past ownerships, wastes, known or suspected contamination pathways such as tanks, septic tank/tile field, lagoon, land applications, S.W. burial, etc)

The site was a former dry cleaning facility which operated for approximately eight years. Dry cleaning operations had ceased by the time the property was sold to the current owners (1994). The Phase II referenced EPA documents (dated 1992) that indicated waste containers of tetrachloroethene (PCE) stored in the shed on northern portion of the site had leaked on some occasions. No other reference to site history was provided.

Briefly describe the site assessment that was conducted (number of borings, monitoring wells, number of samples, depth of soil samples and monitoring wells, analysis, etc.)

As a result of the information obtained in the Phase I report, a soil and groundwater Phase II Environmental Site Assessment (dated April 15, 2008) was performed by Burns and McDonnell Engineering Company, Inc. Ten borings (DP-1 through DP-10) were advanced to depths from 20 to 26 feet below ground surface (bgs). A soil sample was collected from each boring after field screening for organic vapors using a photo ionization detector (PID). All ten soil samples were analyzed for volatile organic compounds (VOCs). A groundwater sample was collected from each boring and analyzed for VOCs. Two sub-slab vapor samples (SVP-1 and SPV-2) were collected below the slab of the main building. The soil vapor samples were analyzed for BTEX, PCE, TCE, chloroform, methylene chloride, and vinyl chloride. Results from this assessment indicated that soil and groundwater had been significantly impacted by the past release of PCE.

The Department required an additional assessment and the environmental consultants, Barker Lemar, conducted a Site Assessment and prepared a Remedial Action Plan (report dated June 2010). Six borings (MW-1 through MW-6) had been advanced onsite to depths from 10 to 20 feet bgs and each was converted to a permanent monitoring well. A soil sample was collected from borings MW-1, MW-2, MW-3, and MW-6 after field screening for organic vapors using a photo ionization detector (PID). All four soil samples were analyzed for PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; and Vinyl Chloride. A groundwater sample was collected from each of the six permanent monitoring wells and analyzed for PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; and Vinyl Chloride. The Barker Lemar site assessment did not fully define the extent of the chlorinated groundwater plume.

The Department obtained access permission from the Wells Fargo property that lies directly east of the Sunshine Laundry property. On December 6, 2010, the Department advanced three Geoprobe® screenpoint borings to depths of 15 to 19 feet bgs in the Wells Fargo parking lot and a groundwater sample was collected from each boring. Groundwater samples were also collected from five of the six permanent wells on the Sunshine laundry property. Monitoring well MW-3 could not be located. All groundwater samples were analyzed for PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; and Vinyl Chloride.

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For the last round of assessment activities, conducted on May 18, 2011, the Department obtained access permission for the Long John Silver's property that lies east of South 25th Street and east of the Wells Fargo property. Four Geoprobe® screenpoint borings were advanced to depths of 15 to 19 feet bgs on the Long John Silver's property. A groundwater sample was collected from two borings, PS-1 and PS-2. Borings PS-3 and PS-4 did not yield water. Groundwater samples were also collected from the six permanent wells on the Sunshine Laundry property. All groundwater samples were analyzed for PCE; TCE; 1-2,DCE (total); and Vinyl Chloride.

On December 19, 2011 the Department collected one last round of groundwater samples from the six permanent monitoring wells that remain on the Sunshine Laundry property. The groundwater samples were analyzed for PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; and vinyl chloride.

Summarize the findings and conclusions regarding the contaminants found and their extent and concentrations. Relate those values to known criteria such as statewide standards, MCLs, water quality standards, background levels or other benchmarks used to determine site priority.

Soil: 4/15/2008 Phase II by Burns and McDonnell Engineering Company, Inc

PCE was detected in one soil sample above Statewide Standard. TCE, cis-1,2-DCE), trans-1,2-DCE), and 1,2-DCE) were detected in one or more soil samples below their applicable Statewide Standard. No other soil contaminants were detected above laboratory detection limits. See Table below.

All units in mg/kg. Exceedances in **Bold**

	Contaminant (mg/kg)				
Sample Location	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,2-DCE
DP-1 (Dup)	0.319	0.008	0.0106	ND	0.0135
DP-2	0.034	ND	ND	ND	ND
DP-3	ND	ND	ND	ND	ND
DP-4	1.850	ND	ND	ND	ND
DP-5	0.0167	ND	ND	ND	ND
DP-6	0.291	ND	ND	ND	ND
DP-7	ND	ND	ND	ND	ND
DP-8	0.262	0.0105	0.0148	ND	0.0194
DP-9	**22.1**	0.052	ND	ND	ND
DP-10	ND	ND	ND	ND	ND
Statewide Standard	5.7	7.7	760	1500	34

ND - Compound not detected above laboratory detection limits

Groundwater: 4/15/2008 Phase II by Burns and McDonnell Engineering Company, Inc

PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; and VC were detected in one or more groundwater samples above their applicable Statewide Standard. No other groundwater contaminants were detected above the applicable Statewide Standard.

All units ug/l. Exceedances in **BOLD**

Sample Location	PCE	TCE	1,2-DCE	cis-1,2-DCE	trans-1,2-DCE	1,2,4-trimethyl benzene	VC	chloroethane
DP-1	**12**	ND	ND	ND	ND	ND	ND	ND
DP-2	**34**	ND	ND	ND	ND	ND	ND	ND
DP-3	**66.4**	ND	ND	ND	ND	ND	ND	ND
DP-4	**190**	ND	**26.4**	24.3	2.1	ND	ND	ND
DP-5	**24.8**	ND	ND	ND	ND	ND	ND	ND
DP-6	**1,040**	**37.9**	**7.0**	7.0	ND	ND	ND	ND
DP-7	**511**	ND	ND	ND	ND	ND	ND	ND
DP-8	**178**	**103**	**440**	**302**	**139**	ND	**2.3**	1.4
DP-9	**2,140**	4.8	**9.9**	6.9	3.0	1.3	ND	ND
DP-10	ND	ND	ND	ND	ND	ND	ND	ND
Statewide Standard*	5	5	5	70	100	350	2	NA

*Statewide Standard for Protected Groundwater
ND - Compound not detected above laboratory detection limits

Soil Vapor: 4/15/2008 Phase II by Burns and McDonnell Engineering Company, Inc

PCE; and m,p-xylene were detected in sub-slab vapor samples above the laboratory detection limits. The detection limit for sample # SVP-1/AR01 was 4.7 ug/m^3. Due to a dilution factor, the detection limit for SPV-2/AR01 was 7,800 ug/m^3. No other contaminants were detected above the detection limits. While there are no Statewide Standards for sub-slab soil vapors, the detected concentrations were converted to indoor air concentrations (using an attenuation factor of 0.1) and the results were entered into the Land Recycling Program (LRP) cumulative risk calculator. The site is not enrolled in the LRP and the use of the cumulative risk calculator to evaluate the detected contaminant concentrations does not infer that a risk assessment has been completed for this site. The results of the cumulative risk calculation are referenced here because it is the only method available to evaluate sub-slab soil vapor concentrations. See Table below for detected concentrations.

Concentrations that exceed the LRP cumulative risk calculator for site worker in **Bold**

Contaminant (ug/m^3)	Sample Number/Location	
	SVP-1/AR01*	SPV-2/AR01
PCE	170	**630,000**
m,p-x ylenes	4.9	ND

* Soil vapor sample SVP/AR01 failed the chemical leak test (helium) and the results are considered invalid.

PCE was detected in both sub-slab vapor samples at concentrations above the screening level of 67 ug/m^3. SVP-1 was located in the utility room near the floor drain in the northeast portion of the facility and SVP-2 was located in the open area in the northwest portion of the facility. The calculated screening levels are based on the USEPA's 2002 *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance).* The sub-slab screening levels were developed by combining risk-based concentrations for indoor air with an attenuation factor to account for migration across a building slab. The indoor air screening levels were calculated based on a target cancer risk level of 1 in 100,000 (lE- 05) or a noncancer hazard index of 0.1, whichever value is more protective (i.e., lower). The calculated risk-based concentrations for indoor air were adjusted by a factor of 0.1 to account for attenuation through the concrete slab. The attenuation factor of 0.1 represents the conservative default value provided in the EPA Guidance. The concentration of PCE at SVP-1 was 170 ug/m^3 and the concentration at SPV-2 was 630,000 ug/m^3. If the 10 per cent attenuation factor is used for the concentration of 630,000 ug/m^3 and the sample run through Department's LRP Cumulative Risk Calculator, that sample would grossly exceed all exposure scenarios (site resident, site worker, and construction worker). The site is not enrolled in the LRP program. m,p-Xylenes were also detected in the sub slab vapor sample at SVP-1 (4.9 ug/m^3 below the calculated screening level of 195 ug/m^3). Xylenes were not detected in any soil or groundwater samples collected onsite during the Burns and McDonnell Phase II. No ESS site investigation activities were directed at addressing the sub slab soil vapor conditions identified onsite during the Burns and McDonnell Phase II (2008).

Soil; June 2010, Site Assessment and Remedial Action Plan, by Barker Lemar and subsequent Department assessments.

No chlorinated solvent contamination was detected above its applicable Statewide Standard in any of the four soil samples submitted during the Barker Lemar assessment. During subsequent investigation activities, no other soil samples have been collected or analyzed.

Groundwater; Sampling data from June 2010, Site Assessment and Remedial Action Plan, by Barker Lemar and subsequent Department assessments.
All units in ug/l. Exceedances in **BOLD**

Sample Location	Date	PCE	TCE	trans-1,2-DCE	cis-1,2-DCE	Vinyl Chloride
MW-1	1/19/2010	2.8	**6**	3.7	20.1	ND
	12/6/2010	ND	**7**	ND	18	ND
	5/18/2011	ND	ND	ND	**8**	ND
	12/19/2011	ND	**5**	*	**9***	
MW-2	1/19/2010	**57.8**	**10.8**	13.7	46.8	ND
	12/6/2010	**350**	**89**	85	**400**	ND
	5/18/2011	**690**	**230**	**120**	**500**	**26**
	12/19/2011	**790**	**200**	*	**640***	**67**
MW-3	1/19/2010	**1,970**	**281**	**518**	**1,110**	**6.2**
	12/6/2010	NS	NS	NS	NS	NS
	5/18/2011	**4,000**	**360**	**590**	**1,100**	**11**
	12/19/2011	**3700**	**420**	*	**1,500***	**11**
MW-4	1/19/2010	**7.3**	1.1	1.4	2.9	ND
	12/6/2010	**22**	ND	ND	ND	ND
	5/18/2011	ND	ND	ND	ND	ND
	12/19/2011	ND	ND	ND*	ND*	ND
MW-5	4/22/2010	**111**	4.5	ND	ND	ND
	12/6/2010	**160**	**14**	ND	ND	ND
	5/18/2011	**160**	**20**	ND	8	ND
	12/19/2011	**190**	**13**	ND*	ND*	ND
MW-6	4/22/2010	**75.3**	**5.1**	2.5	3.5	ND
	12/6/2010	**100**	**17**	10	33	ND
	5/18/2011	**67**	**6**	ND	8	ND
	12/19/2011	**110**	**15**	*	11*	ND
WF-1	12/6/2010	**130**	**270**	**170**	**1,100**	ND
WF-2	12/6/2010	**400**	**210**	**180**	**430**	ND
WF-3	12/6/2010	**1,000**	**310**	**650**	**1,300**	ND
PS-1	5/18/2011	ND	ND	ND	ND	ND
PS-2	5/18/2011	ND	ND	ND	ND	ND
Statewide Standard		5	5	100	70	2

*Concentrations of cis-1,2-DCE and trans-1,2-DCE were combined and reported as total 1,2-DCE in 12/19/2011 sampling event. This table lists that total concentration as cis-1,2-DCE, the compound with the lower Statewide Standard.

Identify on-site or off-site potential and actual targets (e.g., municipal wells, private wells, drinking water intakes). What is known of the neighboring area, i.e., are there residences, businesses, public use areas, etc.? Are there utility lines that could be impacted by site contaminants? Identify any other use/location issues that deserve consideration.
The site is located in a light industrial/commercial area on the east side of Fort Dodge. The nearest residence appears to be approximately 1,300 feet west of the site. Water service to the Sunshine Laundry is marked as a 2-inch copper line. Service line location and composition to the neighboring Wells Fargo property is unknown. The water main (along 5th Ave. South) is marked as 8-inch cast iron. Barker Lemar determined groundwater conductivity at three monitoring wells, MW-1 (0.548 m/day); MW-3 (0.481 m/day); and MW-4 (0.193 m/day). Groundwater flow direction is indicated to be to the northeast. The nearest well to the site is a private well 840 to the southwest – up gradient from the site. The site is 2,800 feet outside the source water protection zone for Fort Dodge's municipal system.

Summarize the reasoning, knowledge or any other information used in determining your response regarding your review of this site.

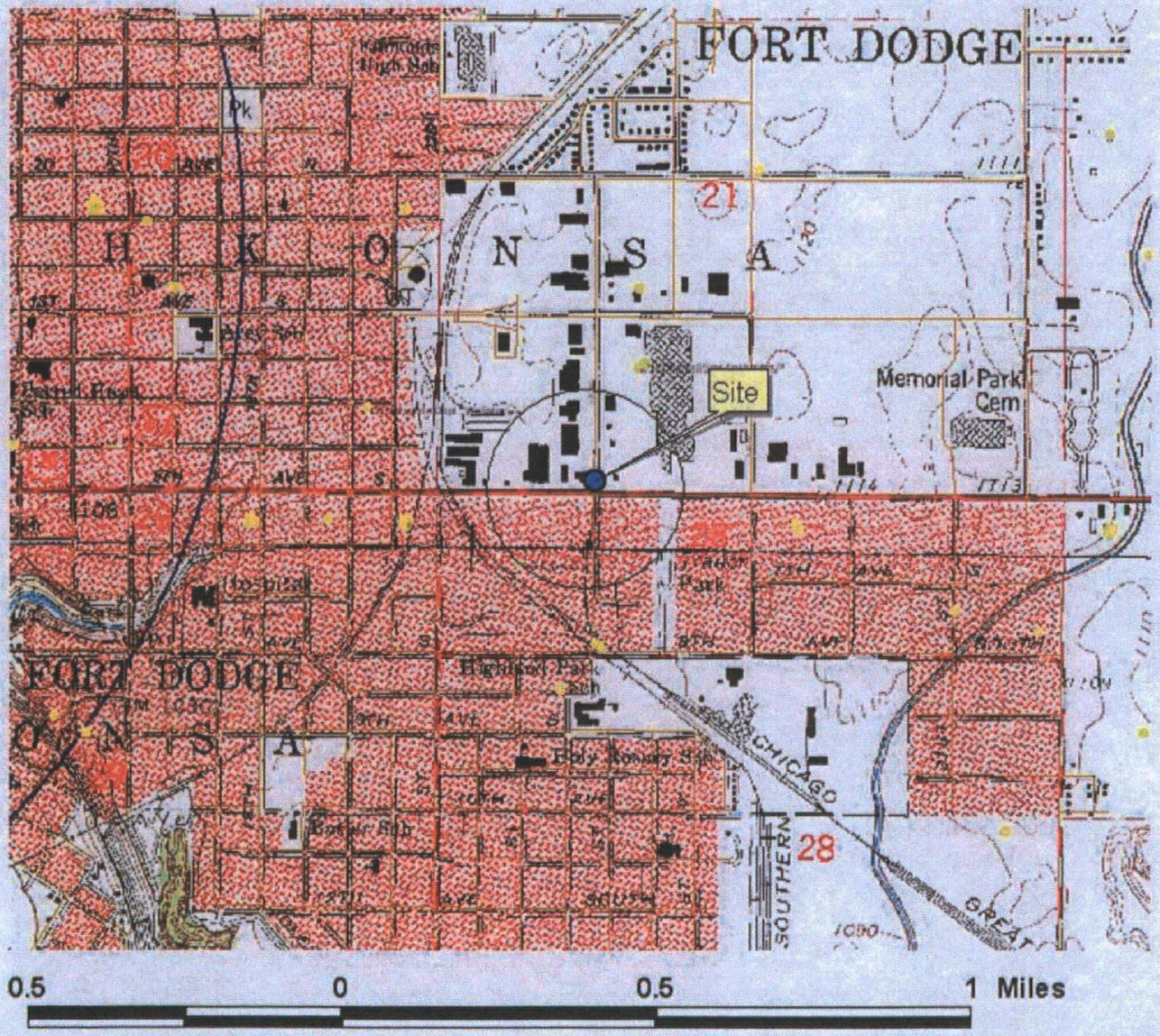
ESS site investigation activities were conducted in an attempt to determine the off site impact of the contaminated groundwater plume. These activities were partially driven by the pending intent to purchase the property, demolish the onsite building, and expand the parking lot of the neighboring Nestle Purina Pet Care Company facility to the west. Contaminated groundwater has been shown to extend offsite to the northeast impacting the parking lot north of the neighboring Wells Fargo Bank. Reduction is occurring at the leading edge of the plume. The plume does not appear to extend east of South 25th Street. Soil conditions and geographic settings would seem to indicate that further delineation of the groundwater plume would not be necessary at this time unless chlorinated concentrations prove to be increasing. With only four rounds of sampling to date, annual monitoring of the six permanent wells located on the Sunshine property is recommended. If possible, a soil gas sample collected at the northwest corner of the Wells Fargo building may also be warranted.

Site recommended for:

- ☐ No further action
- ☒ Additional investigation under state program (activity code 2824)
- ☐ Additional investigation by responsible party
- ☐ Transfer to LUST/UST

Form Reviewed: Cal Rundberg **Date Reviewed:** 7/12/12

Sunshine Laundry, Fort Dodge



All_wells_public.shp
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Nonmunicipal PWS
Municipal wells

Source Water Protection Area
- 2-year
- 5-year
- 10-year
- 2500-foot
- 1-mile
- primary protection area
- surface runoff area
- hydrologic boundary
- County

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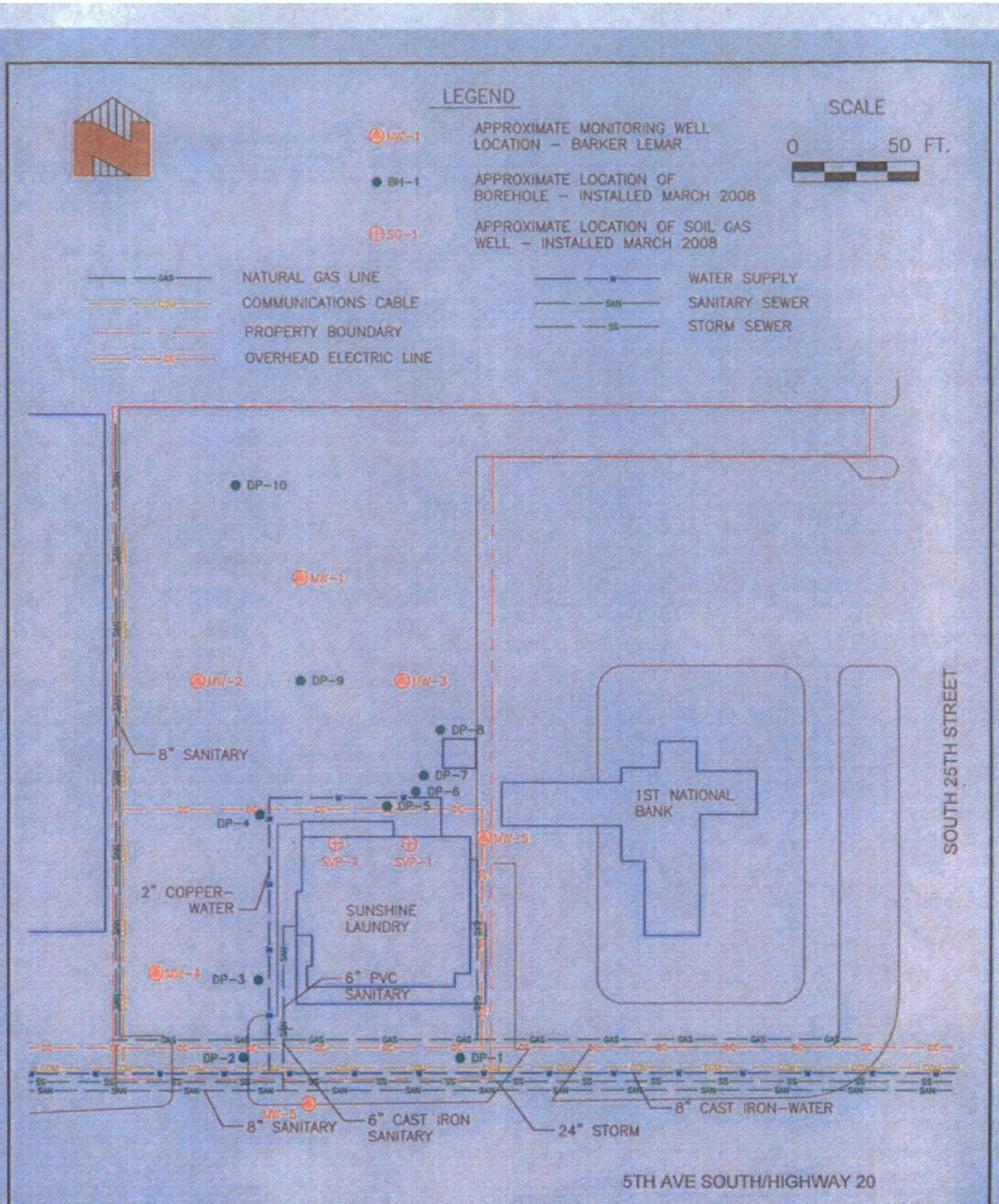

SITE MAP
SUNSHINE LAUNDRY
FORT DODGE, IOWA
PROJECT NO. SNSHN 09000
DRAWING DATE: APRIL 2010

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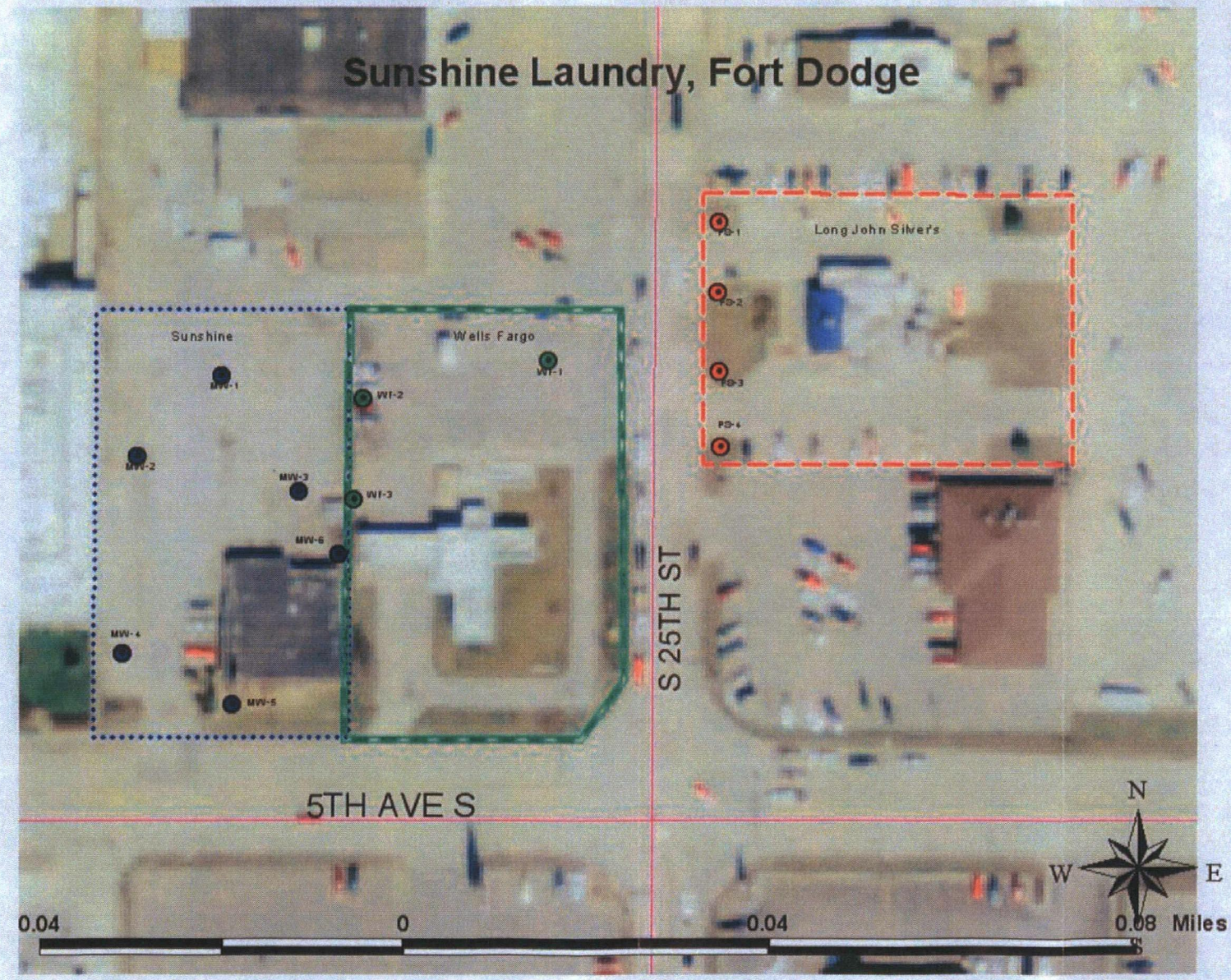
FIGURE 1


Sunshine Laundry, Fort Dodge
Sunshine
Wells Fargo
Long John Silver's
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
WF-1
WF-2
WF-3
PD-1
PD-2
PD-3
PD-4
S 25TH ST
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